

- 42 -

CLAIMS

1. A method of diagnosing HCC or a predisposition for developing HCC in a subject, comprising determining a level of expression of *MGC47816* or *HES6* in a patient-derived biological sample, wherein an increase in said sample expression level as compared to a normal control level of said gene indicates that said subject suffers from or is at risk of developing HCC.
2. The method of claim 1, wherein said sample expression level is at least 10% greater than said normal control level.
- 10 3. The method of claim 1, wherein the expression level is determined by any one method selected from group consisting of:
 - (a) detecting mRNA of *MGC47816* or *HES6*,
 - (b) detecting a protein encoded by *MGC47816* or *HES6*, and
 - (c) detecting a biological activity of a protein encoded by *MGC47816* or *HES6*,
- 15 4. The method of claim 3, wherein said detection is carried out on a DNA array.
5. The method of claim 1, wherein said patient-derived biological sample comprises an epithelial cell.
6. The method of claim 1, wherein said patient-derived biological sample comprises a hepatocellular carcinoma cell.
- 20 7. The method of claim 1, wherein said patient-derived biological sample comprises an epithelial cell from a hepatocellular carcinoma.
8. A method of screening for a compound for treating or preventing HCC, said method comprising the steps of:
 - 25 a) contacting a test compound with a polypeptide encoded by *MGC47816* or *HES6*;
 - b) detecting the binding activity between the polypeptide and the test compound; and
 - c) selecting the test compound that binds to the polypeptide.
- 30 9. A method of screening for a compound for treating or preventing HCC, said method comprising the steps of:
 - a) contacting a candidate compound with a cell expressing *MGC47816* or *HES6*, and
 - b) selecting the candidate compound that reduces the expression level of *MGC47816* or *HES6*.
- 35

- 43 -

10. The method of claim 9, wherein said cell comprises a hepatocellular carcinoma cell.
11. A method of screening for a compound for treating or preventing HCC, said method comprising the steps of:
 - 5 a) contacting a test compound with a polypeptide encoded by *MGC47816* or *HES6*;
 - b) detecting the biological activity of the polypeptide of step (a); and
 - c) selecting the test compound that suppresses the biological activity of the polypeptide as compared to the biological activity detected in the absence
10 of the test compound.
12. The method of claim 11, wherein the biological activity of the polypeptide is cell proliferative activity.
13. A method of screening for compound for treating or preventing HCC, said method comprising the steps of:
 - 15 a) contacting a candidate compound with a cell into which a vector, comprising the transcriptional regulatory region of *MGC47816* or *HES6* and a reporter gene that is expressed under the control of the transcriptional regulatory region, has been introduced
 - b) measuring the expression or activity of said reporter gene; and
 - 20 c) selecting the candidate compound that reduces the expression or activity of said reporter gene, as compared to a control.
14. A kit comprising a detection reagent which binds to (a) the nucleic acid sequence of *MGC47816* or *HES6* or (b) a polypeptide encoded thereby.
15. A method of treating or preventing HCC in a subject comprising
25 administering to said subject an antisense composition, wherein said antisense composition comprises a nucleotide sequence complementary to a coding sequence of *MGC47816* or *HES6*.
16. A method of treating or preventing HCC in a subject comprising administering to said subject an siRNA composition, wherein said siRNA
30 composition reduces the expression of *MGC47816* or *HES6*.
17. The method of claim 16, wherein the siRNA comprises a sense strand comprising a nucleotide sequence selected from the group consisting of of SEQ ID NO: 19 and 26 as the target sequence.
18. A method for treating or preventing HCC in a subject comprising the step of
35 administering to said subject a pharmaceutically effective amount of an

- 44 -

antibody, or fragment thereof, that binds to a protein encoded by *MGC47816* or *HES6*.

19. A method of treating or preventing HCC in a subject comprising administering to said subject a vaccine comprising (a) a polypeptide encoded by *MGC47816* or *HES6*, (b) an immunologically active fragment of said polypeptide, or (c) a polynucleotide encoding said polypeptide.
20. A method for treating or preventing HCC in a subject, said method comprising the step of administering a compound that is obtained by the method according to any one of claims 8-13.
21. A composition for treating or preventing HCC, said composition comprising a pharmaceutically effective amount of an antisense polynucleotide or small interfering RNA (siRNA) against *MGC47816* or *HES6* as an active ingredient, and a pharmaceutically acceptable carrier.
22. The composition of claim 21, wherein the siRNA comprises a sense strand comprising a nucleotide sequence selected from the group consisting of SEQ ID NO: 19 and 26 as the target sequence.
23. A composition for treating or preventing HCC, said composition comprising a pharmaceutically effective amount of an antibody or fragment thereof that binds to a protein encoded by *MGC47816* or *HES6* as an active ingredient, and a pharmaceutically acceptable carrier.
24. A composition for treating or preventing HCC, said composition comprising a pharmaceutically effective amount of a compound selected by the method of any one of claims 8-13 as an active ingredient, and a pharmaceutically acceptable carrier.
25. A small interfering RNA, wherein the sense strand thereof comprises a nucleotide sequence selected from the group consisting of SEQ ID NO: 19 and 26 as the target sequence.